

BEFORE THE  
**Federal Communications Commission**

WASHINGTON, D.C. 20554

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FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

In the Matter of )  
 )  
Amendment of Parts 2, 22, 90 and )  
94 of the Commission's Rules and )  
Regulations to Permit Routine )  
Licensing and Use of Bi-Directional )  
Signal Boosters )

RM - 8200

To: The Commission

**REPLY TO RESPONSIVE STATEMENTS**

TX RX Systems, Inc. ("TX RX"), by its attorneys and pursuant to Section 1.405(b) of the Rules and Regulations of the Federal Communications Commission ("FCC"), files this reply to statements and comments filed in this proceeding.

1. Responsive statements and comments have been filed by: Motorola, Inc. ("Motorola"), a major manufacturer and operator of telecommunications equipment and systems; Celwave, a supplier of communications equipment; Jack Daniel ("Daniel"), a telecommunications consultant; Allen Telecom Group ("ATG"), a manufacturer of bi-directional signal boosters; and the Utilities Telecommunications Council ("UTC"), the communications trade association of the

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nation's utilities. These comments reflect unanimous support for the benefits associated with the use of bi-directional signal boosters.

**A. THE COMMENTS MANIFEST GENERAL SUPPORT FOR THE CONCEPT**

2. TX RX has asked the FCC to propose rules that would expand the use of signal boosters beyond their presently-permitted use by cellular systems and at airports. Without exception, all of the commenters agree that these devices can enhance the utility of many types of licensed systems. Several of the commenters point out that signal boosters can be especially beneficial in public safety applications. (ATG, at 2; Daniel, at 3; and Celwave, at 4). Daniel points out (at 4) that the increasing use of low power, hand-held units in urban settings and buildings is creating a requirement for more ubiquitous coverage. The consensus, then, is that there is a demand for these devices.

3. At present, signal boosters may only be operated by cellular systems and at airports. Others who desire to employ signal boosters in their systems must obtain a waiver from the FCC. Once again, there is unanimous support for a more routine authorization procedure which would be less

burdensome on both the applicant and the Commission. Views differ only with respect to what that authorization procedure should be and the scope of operations that should be authorized.

4. There would seem to be no operational constraint on the Commission's latitude to fashion an authorization procedure. While UTC has expressed concern about potential interference, the fact is that signal boosters do not extend coverage; they merely fill in areas where there ought to be coverage anyway. Both Celwave (at 4) and Motorola (at 2) point out that there are no known instances where interference has been caused by systems using such devices pursuant to the rules or to waivers.

**B. SIGNAL BOOSTERS ARE USEFUL IN ALL BANDS**

5. Motorola urges (at 2) that signal boosters are needed in a variety of radio services, including paging, two-way dispatch and multiple address systems, and that signal boosters should be authorized in the 150-170 MHz, 470-512 MHz, 800 and 900 MHz bands. Celwave also urges that all service bands be included (comments at 5-6). TX RX agrees and wishes to dispel any doubt in that regard.

6. Motorola would go further and authorize the use of a signal booster that amplifies and translates the signal to another frequency for which the licensee has exclusive use (comments at 3). ATG agrees (at 3). Both point out that, especially in low user density areas, this is the most spectrum-conservative approach to coverage, since the alternatives, namely, higher-power base stations or fill-in transmitters, result in coverage that can be excessive. While this is not the primary thrust of TX RX's petition, it is consistent with our purpose in seeking to authorize the use of technological solutions to difficult coverage situations.

**C. KEEPING THE PAPERWORK TO A MINIMUM**

7. TX RX has proposed to authorize the use of signal boosters under a licensee's principal authorization, just as police radar units are authorized for operation under the police department's dispatch license. UTC contends (at 6) that this approach "would not impose a meaningful burden on system licensees," especially those that propose to operate what we have called Class B, broadband, signal boosters. UTC would subject such applicants to the full panoply of licensing requirements, including a separate application, frequency coordination, confinement to "protected

environments" and mandatory use of signal minimizing hardware, such as downtilted antennas.

8. Regarding what we call Class A, narrowband signal boosters, UTC would not permit licensing on shared bands below 800 MHz (comments at 5). Furthermore, UTC would require licensees to obtain a blanket authorization and to notify the FCC and the frequency coordinators of the details of specific signal booster deployment (comments at 5-6).

9. UTC's approach certainly would succeed in imposing burdens on applicants, but we cannot agree that such burdens are necessary or justifiable. No other commenter saw a need to be so restrictive. As discussed above, UTC's concerns about potential interference are not justified because of the very nature of signal boosters. The entire purpose of a signal booster is to put a signal where it ought to be, but is not, due to physical obstructions. Under such circumstances, there is no need to be greatly concerned with measures designed to contain the signal.

10. Celwave (at 5) and Daniel (at 6) see no need for a separate license, so long as the signal boosters have been type accepted. Motorola (at 3) suggests that a letter could be added to the station class designation that appears on

the operator's main license when the use of signal boosters has been authorized. We continue to believe that authorization by rule of the use of type accepted equipment is sufficient. Compare, Section 95.404 of the FCC's rules.

**D. OTHER TECHNICAL CONCERNS**

11. Only ATG suggested (at 2) that a directional antenna should be used at the signal booster, in the direction of the desired base station, in order to minimize the boosting of unwanted signals. Such a measure might be prudent in a given situation, but it should not be a universal requirement in all situations. Under our proposal, the operator of the signal booster would continue to have responsibility to cure any interference that might result and there should be no restrictions on the licensee's discretion to select the most appropriate palliative measure.

12. ATG also suggested (at 3) with respect to

the Commission deemed it necessary, we would not be opposed to this requirement.

**E. CONCLUSION**

13. Of the commenters who responded in this proceeding, the four that are in the day-to-day business of solving their customers' coverage problems with hardware solutions immediately recognized the value of our proposal for rule making. The fifth, although generally supportive, proposed a burdensome regulatory overlay that could detract from the technological advances which are being sought in this proceeding. TX RX urges the Commission to adopt the

**CERTIFICATE OF SERVICE**

I, Patt Meyer, a secretary in the law firm of Keller  
and Heckman, do hereby certify that a copy of the foregoing  
REPLY TO RESPONSIVE STATEMENTS has been served this 3rd day